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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/675,629

09/30/2003

Avinash Dalmia

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03/08/2007

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EXAMINER

MOSS, KERI A

ART UNIT

PAPER NUMBER

1743

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/08/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/675,629

Applicant(s)

DALMIA ET AL.

Examiner

Keri A. Moss

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,6,11,12,14-16 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,6,11,12,14-16 and 18-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 26, 2006 has been entered.

Claims 1, 3, 6, 11-12, 14-16 and 18-21 are pending.

### ***Response to Amendment***

2. Applicant's amendments have overcome the previous rejection under 35 USC 102.

Previous rejections under 35 USC 103 have been maintained.

### ***Claim Interpretation***

3. Examiner notes that she interprets the word "coupled" to mean "joined together for combined effect."

Examiner interprets the word "filter" to represent any part capable of separating components in a mixture.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how a "gas in the opening..." further defines the structure of the apparatus when the gas is the sample on which the apparatus works.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 3, 6 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Forster (USP 4,668,635). Forster teaches an apparatus comprising a reactor for oxidizing or reducing a sample (Fig. 3 part 7, including part 10); at least two filters coupled to the reactor, each filter for filtering out a different undesirable component and for permitting the desired component to pass through (one of Fig. 3 parts 80 and 81 or

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Fig. 3 parts 85 and 86); and a detector coupled to each of said at least two filters for detecting the desired component (Fig. 3 parts 90, 91). Said detector is a plurality of electrochemical sensors for detecting multiple components (Fig. 3 parts 14 and 15) as the detectors read the chemical change in the catalyst layers 14 and 15 and interpret the signals electronically (column 12 lines 6-19). The sensors are capable of detecting more than one type of gas (column 2 lines 51-59).

8. Claims **3 and 16** are rejected under 35 U.S.C. 102(b) as being anticipated by Jester et al. (USP 4,663,113). Jester teaches an apparatus comprising a reactor for oxidizing or reducing a sample (nuclear reactor); at least two filters coupled to the reactor (Fig. 1 parts 16 and 17), each filter for filtering out a different undesirable component and for permitting the desired component to pass through (paragraph bridging columns 2 and 3); and a detector coupled to each of said at least two filters for detecting the desired component (Fig 1 parts 20 and 21).

9. Claims **3 and 16** are rejected under 35 U.S.C. 102(b) as being anticipated by Baccanti et al. (USP 5,429,946). Baccanti teaches an apparatus comprising a reactor for oxidizing or reducing a sample (Part 1); at least two filters coupled to the reactor, each filter for filtering out a different undesirable component and for permitting the desired component to pass through (see Fig. 1 alternative 5); and a detector coupled to each of said at least two filters for detecting the desired component (column 4 lines 11-20).

10. Claims **3 and 16** are rejected under 35 U.S.C. 102(e) as being anticipated by Tsai et al. (USP 6,592,817). Tsai et al teach an apparatus comprising a reactor for oxidizing or reducing a sample (Fig. 1a parts 17 and 12; see columns 3-4); at least two filters coupled to the reactor (Fig. 3b parts 317 and 319), each filter for filtering out a different undesirable component and for permitting the desired component to pass through; and a detector coupled to each of said at least two filters for detecting the desired component (Fig. 3b parts 321 and 323).

***Claim Rejections - 35 USC § 103***

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claims **3, 6 and 16 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes (USP 6,830,730) in view of LaConti, supra. Rhodes discloses a system and method for determining a total concentration of a component comprising a thermal oxidizer reactor for oxidizing the sample (column 5 lines 1-5) coupled to a detector (column 5 lines 34-37) or a plurality of detectors (column 6 lines 1-5) coupled to a filter (column 5 line 66) that filters out undesirable components (column 5 lines 36-38). In addition to the filter, the apparatus can include a dryer for separating water from the components (column 5 lines 46-65), which acts as a filter because it separates out water from the other components. Rhodes teaches using two filters (such as a filter and a dryer) in column 5 lines 36-42. Rhodes discloses a plurality of

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electrochemical gas sensors for detecting multiple components (column 10 line 57; column 14 lines 1-3).

Rhodes does not disclose the specifics of the electrochemical sensor. LaConti, *supra*, discloses an electrochemical sensor (column 4 lines 7-14) comprising: a substrate (Fig. 1, parts holding the reservoir 14, diffusion tube 30 and gas flow chamber 40) on which electrodes (parts 22, 24, and 26) are deposited; an ionomer membrane (Fig. 6 part 20) having a first and second surface; an electrode (Fig. 6 parts 22, 24 or 26) in contact with the surface of the substrate; an opening in the form of pores extending from the first surface of the ionomer membrane to the second surface proximate to the electrode for defining a passage in the form of pores (column 3 lines 44-50). A gas is inherently in this porous opening as the LaConti apparatus is not in a vacuum.

LaConti teaches that this electrochemical sensor leads to faster response times and greater immunity to interference from counter electrode reaction products. Therefore, it would have been obvious for one of ordinary skill in the art to combine the apparatus of Rhodes with the electrochemical sensor taught by LaConti in order to gain the advantage of having a faster response time and to gain the additional advantage of a sensor that has a more accurate result.

Applicant has amended claim 1 to include a gas in the porous opening; however, the material or article worked upon does not limit apparatus claims. MPEP §2115. "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." Ex

parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). Since the gas is the article being worked on by the gas sensor in the instant application, the gas limitation does not impart patentability on the claim. Therefore, a prior art reference need not have a gas in the opening to meet the limitations of claim 1. Nevertheless, the office maintains that a gas is inherently in the porous openings of membrane 20 of LaConti.

13. Claims **18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes and LaConti as applied to claims 3,6 and 16 supra and further in view of Baccanti (USP 5,612,225). While Rhodes teaches a separating step, Rhodes and LaConti do not teach including a gas chromatography column in the apparatus. Baccanti teaches an analytical apparatus with a gas chromatography column (Fig. 1 part 5) coupled to a reactor (Fig. 1 part 4) and preceding a filter (Fig. 1 part 7). Baccanti teaches that this apparatus and method separates methane from Nitrogen, leading to more accurate results. Therefore it would have been obvious for one of ordinary skill in the art to modify Rhodes and LaConti with the gas chromatography column taught by Baccanti in order to eliminate undesirable compounds such as methane, providing a more accurate result.



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14. Claims 1, 3, 6, 11-12, 14-16 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baccanti (USP 5,612,225) in view of LaConti. Baccanti teaches a method and apparatus for determining total concentration of a component in a sample by reducing the sample in a reactor (Fig. 1 part 4), flowing the gas through a water trap for filtering out moisture (Fig. 1 part 5) gas chromatograph (Fig. 1 part 6) for separation, filtering out CO<sub>2</sub> in a CO<sub>2</sub> filter (Fig. 1 part 7), then analyzing the combustion gases using a detector (Fig. 1 part 8). In this case, parts 5 and 7 represent filters (see Claim Interpretation, supra) that are arranged in parallel (Fig. 1).

Baccanti does not teach using an electrochemical detector. LaConti, supra, discloses an electrochemical sensor (column 4 lines 7-14) comprising: a substrate (Fig. 1, parts holding the reservoir 14, diffusion tube 30 and gas flow chamber 40) on which electrodes (parts 22, 24, and 26) are deposited; an ionomer membrane (Fig. 6 part 20) having a first and second surface; an electrode (Fig. 6 parts 22, 24 or 26) in contact with the surface of the substrate; an opening in the form of pores extending from the first surface of the ionomer membrane to the second surface proximate to the electrode for defining a passage in the form of pores (column 3 lines 44-50). A gas is inherently in this porous opening as the LaConti apparatus is not in a vacuum. LaConti also teaches using a plurality of detectors for comparison testing (Example 8). Furthermore, LaConti also teaches that many gases may be detected with this electrochemical gas detector (Table 1). Therefore, it would have been obvious for one of ordinary skill in the art to use a plurality of LaConti sensors in order to detect more than one gas at a time.

LaConti teaches that this electrochemical sensor leads to faster response times and greater immunity to interference from counter electrode reaction products. Therefore, it would have been obvious for one of ordinary skill in the art to combine the apparatus of Baccanti with the electrochemical sensor taught by LaConti in order to gain the advantage of having a faster response time and to gain the additional advantage of a detector that has a more accurate result.

### ***Response to Arguments***

15. Applicant's arguments, see Applicant's Amendment, filed December 26, 2006, with respect to the 35 USC 102 rejection under LaConti have been fully considered and are persuasive. The rejection of claims 3 and 16 under 35 USC 102 have been withdrawn.

16. Applicant's arguments regarding the rejections under 35 USC 103(a) have been fully considered but they are not persuasive.

Applicant argues that Rhodes and Baccanti lack any teaching or suggestion for at least two filters coupled to the reactor. As explained in the Claim Interpretation section, examiner interprets the word "filter" to represent any part capable of separating components. As discussed in the rejections, supra, both Rhodes and Baccanti teach two filters because they teach using two parts that separate components.

Applicant argues that the filters in Rhodes and Baccanti are not coupled to the detector. As explained in the Claim Interpretation section, supra, Examiner interprets

"coupled" to mean "joined together for combined effect." Since the filters in Rhodes and Baccanti are joined as part of the apparatus and work towards the combined effect of analyzing the components of a sample, Examiner finds that these filters are coupled to the detectors taught in these respective references.

Finally, Applicant argues that LaConti lacks a gas in the opening for simultaneously contacting the electrode and ionomer membrane for providing a three-way contact between the gas, electrode and ionomer membrane, stating that the electrode does not extend inside any pores of the membrane. Examiner respectfully disagrees with applicant's interpretation of the claim language. The electrode does not need to be inside a pore for the gas to provide a three-way contact. As stated by applicant, the membrane abuts the electrode, therefore providing contact between the electrode and the membrane. A gas in a pore that abuts the electrode will contact the outer edges of the pore while contacting the surface of the electrode, therefore providing three-way contact.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keri A. Moss  
Examiner  
Art Unit 1743

KAM 3/5/07

A handwritten signature in black ink, appearing to read 'Lyle A. Alexander', with a stylized flourish at the end.

**LYLE A. ALEXANDER**  
**PRIMARY EXAMINER**